



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/064,893	08/27/2002	Robert Anthony Fusaro JR.	120581	7971

6147 7590 08/05/2003

GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH CENTER
PATENT DOCKET RM. 4A59
PO BOX 8, BLDG. K-1 ROSS
NISKAYUNA, NY 12309

EXAMINER

BAREFORD, KATHERINE A

ART UNIT	PAPER NUMBER
----------	--------------

1762

DATE MAILED: 08/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/064,893

Applicant(s)

FUSARO ET AL.

Examiner

Katherine A. Bareford

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The use of the settable plasma transferred arc apparatus should be mentioned.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 7-8 and 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolkers et al (US 2003/0082297) in view of French 2 527 891 (hereinafter '891).

Wolkers teaches a method for protecting an article from degradation. Paragraph [0011].

A substrate is provided. Paragraph [0024]. A plasma spraying apparatus can be provided.

Art Unit: 1762

Paragraphs [0028] and [0033]. The plasma spraying apparatus can be operated to deposit at least one coating on the substrate. Paragraphs [0028] and [0033].

Claim 7: the substrate can be a component of a gas turbine assembly. Paragraphs [0002], [0013] and [0024].

Claim 8: the component can be removed from a turbine assembly prior to the coating treatment. Paragraphs [0024] – [0025].

Claim 11: the coating can be a metal or a ceramic. Paragraphs [0028] and [0031].

Claim 12: the coating can be a bond coat material. Paragraph [0028].

Claim 13: the bond coat material can be an M Cr Al Y material, where M is Fe, Ni or Co. paragraph [0030].

Claim 14: the bond coat material can also be an aluminide compound. Paragraph [0030].

Claim 15: the coating can be a thermal barrier coating. Paragraph [0031].

Claim 16: the thermal barrier coating can be a yttria stabilized zirconia. Paragraph [0031].

Wolters teaches all the features of these claims except the use of a plasma transferred arc apparatus that is set to a non-transferred arc mode for the coating.

However, '891 teaches that a plasma gun can be provided. Abstract. The gun can be provided to operate with a non-transferred arc mode or a transferred arc mode for different coating or welding conditions. See the abstract.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wolkers to use a plasma gun that can be operated in either transferred arc or non-transferred arc mode, and to operated the gun in a non-transferred arc mode as suggested by '891 with an expectation of desirable coating results, because Wolkers teaches a coating treatment using plasma spraying, and '891 teaches that a desirable plasma spray gun allows for operation in the transferred arc or non-transferred arc mode depending on the coating conditions.

5. Claims 1, 5-7, 10-13 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasz et al (US 6355356) in view of French 2 527 891 (hereinafter '891).

Hasz teaches a method for protecting an article from degradation. Column 2, lines 25-60. A substrate is provided. Column 3, lines 10-35. A plasma spraying apparatus can be provided. Column 5, lines 55-60 and column 8, line 65 through column 9, line 5. The plasma spraying apparatus can be operated to deposit at least one coating on the substrate. Column 5, lines 45-60 and column 8, lines 45-68.

Claim 5: the substrate can be a metal. Column 3, lines 10-20.

Claim 6: the substrate can be a nickel or cobalt based alloy. Column 3, lines 10-40.

Claim 7: the substrate can be a component of a gas turbine assembly. Column 3, lines 35-40.

Claim 10: the coating material can be a powder. Column 6, lines 1-10.

Art Unit: 1762

Claim 11: the coating can be a metal or a ceramic. Column 5, lines 45-60 and column 8, lines 45-68.

Claim 12: the coating can be a bond coat material. Column 5, lines 45-60.

Claim 13: the bond coat material can be an M Cr Al Y material, where M is Fe, Ni or Co. Column 5, lines 45-55.

Claim 15: the coating can be a thermal barrier coating. Column 8, lines 45-68.

Claim 16: the thermal barrier coating can be a yttria stabilized zirconia. Column 8, lines 45-68.

Hasz teaches all the features of these claims except the use of a plasma transferred arc apparatus that is set to a non-transferred arc mode for the coating.

However, '891 teaches that a plasma gun can be provided. Abstract. The gun can be provided to operate with a non-transferred arc mode or a transferred arc mode for different coating or welding conditions. See the abstract.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hasz to use a plasma gun that can be operated in either transferred arc or non-transferred arc mode, and to operated the gun in a non-transferred arc mode as suggested by '891 with an expectation of desirable coating results, because Hasz s teaches a coating treatment using plasma spraying, and '891 teaches that a desirable plasma spray gun allows for operation in the transferred arc or non-transferred arc mode depending on the coating conditions.

Art Unit: 1762

6. Claims 2-4 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolkers in view of '891 as applied to claims 1, 7-8 and 11-16 above, and further in view of EP 490 882 A1 (hereinafter '882).

Wolkers in view of '891 teaches all the features of these claims except (1) operating the plasma transferred arc (PTA) apparatus using a pilot arc power supply to provide the coating (claims 2, 17), and (2) using the PTA apparatus in a transferred arc mode to form a welded region on the substrate prior to coating (claims 3-4, 17). Wolkers does teach that prior to applying the coating, the substrate can be treated with a welding process to repair the blade. Paragraph [0027]. After the welding process, coating can be applied over the welded area by a plasma process. See paragraph [0028].

'882 teaches an arc plasma torch. Column 3, lines 1-10. The plasma torch can be started through a contact method, which forms a pilot arc. Column 3, lines 1-10. This pilot arc provides a non-transferred arc operational mode of the torch. Column 3, lines 10-25 and column 6, lines 1-20. The torch can be operated in the non-transferred mode or switched to a transferred arc mode. Column 3, lines 10-25 and column 6, lines 1-35.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wolkers in view of '891 to use a plasma spray torch that can operate in a non-transferred arc mode using a pilot arc or operated using a transferred arc mode as suggested by '882 in order to provide an efficient and desirable coating process, because Wolkers in view of '891 teach a processing operation that involves welding and coating treatments and that it is known to use plasma spray guns that can operate in either transferred and non-transferred arc

Art Unit: 1762

mode to provide welding and coatings, and '882 teaches a desirable method of providing a plasma torch that can easily switch between non-transferred and transferred mode, thus efficiently allowing multiple treatments to be done with one apparatus. One of ordinary skill in the art would perform routine experimentation to optimize which treatment (coating or welding) should be performed in which mode (transferred or non-transferred) based on the gas turbine blade substrate and the amount of welding and coating to be done. This would provide the claimed pattern of transferred welding followed by non-transferred coating.

7. Claims 2-4 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasz in view of '891 as applied to claims 1, 5-7, 10-13 and 15-16 above, and further in view of EP 490 882 A1 (hereinafter '882).

Hasz in view of '891 teaches all the features of these claims except (1) operating the plasma transferred arc (PTA) apparatus using a pilot arc power supply to provide the coating (claims 2, 17), and (2) using the PTA apparatus in a transferred arc mode to form a welded region on the substrate prior to coating (claims 3-4, 17). Hasz does teach that prior to applying the coating, the substrate can be treated with a welding process to apply a braze foil. Column 4, lines 40-55 and column 30-45. After the welding process, coating can be applied over the welded area by a plasma process. Column 5, lines 40-55.

'882 teaches an arc plasma torch. Column 3, lines 1-10. The plasma torch can be started through a contact method, which forms a pilot arc. Column 3, lines 1-10. This pilot arc provides a non-transferred arc operational mode of the torch. Column 3, lines 10-25 and column

Art Unit: 1762

6, lines 1-20. The torch can be operated in the non-transferred mode or switched to a transferred arc mode. Column 3, lines 10-25 and column 6, lines 1-35.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hasz in view of '891 to use a plasma spray torch that can operate in a non-transferred arc mode using a pilot arc or operated using a transferred arc mode as suggested by '882 in order to provide an efficient and desirable coating process, because Hasz in view of '891 teaches a processing operation that involves welding and coating treatments and that it is known to use plasma spray guns that can operate in either transferred and non-transferred arc mode to provide welding and coatings, and '882 teaches a desirable method of providing a plasma torch that can easily switch between non-transferred and transferred mode, thus efficiently allowing multiple treatments to be done with one apparatus. One of ordinary skill in the art would perform routine experimentation to optimize which treatment (coating or welding) should be performed in which mode (transferred or non-transferred) based on the gas turbine blade substrate and the amount of welding and coating to be done. This would provide the claimed pattern of transferred welding followed by non-transferred coating.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wolkers in view of '891 as applied to claims 1, 7-8 and 11-16 above, and further in view of Legros (US 5152058).

Wolkers in view of '891 teaches all the features of this claim except the in situ treatment of the turbine component.

However, Legros teaches that when repairing turbine blades, it is desirable to perform the repair on the blades in situ, i.e. while they are connected to the rotor. See column 1, lines 1-20 and column 2, lines 15-30. The various machines for repair are positioned to repair the blades in situ. See column 2, lines 25-40.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wolkers in view of 891 to provide in situ treatment of the turbine blades as suggested by Legros in order to provide an efficient and desirable coating process, because Wolkers in view of '891 teach a processing operation that involves welding and coating treatments to repair turbine blades, and Legros teaches that it is desirable to perform repairs in situ for more efficient treatment timewise and to prevent further damage to the blades.

9. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wolkers in view of '891 and '882 as applied to claims 2-4 and 17 above, and further in view of Legros (US 5152058).

Wolkers in view of '891 and '882 teaches all the features of this claim except the in situ treatment of the turbine component.

However, Legros teaches that when repairing turbine blades, it is desirable to perform the repair on the blades in situ, i.e. while they are connected to the rotor. See column 1, lines 1-20 and column 2, lines 15-30. The various machines for repair are positioned to repair the blades in situ. See column 2, lines 25-40.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wolters in view of 891 and '882 to provide in situ treatment of the turbine blades as suggested by Legros in order to provide an efficient and desirable coating process, because Wolters in view of '891 and '882 teach a processing operation that involves welding and coating treatments to repair turbine blades, and Legros teaches that it is desirable to perform repairs in situ for more efficient treatment timewise and to prevent further damage to the blades.


10. Fox et al (US 4013866) teaches that when using plasma torches, it is desirable to provide the non-transferred arc mode for coating and the transferred arc mode for welding. See column 1, lines 1-30. Hanus et al (US 5362939) teaches a convertible plasma arc torch, convertible between transferred and non-transferred arc mode.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (703) 308-0078. The examiner can normally be reached on M-F(7:00-4:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


KATHERINE A. BAREFORD
PRIMARY EXAMINER
GROUP 1100/700